CLAIMS ≪amended under PCT Article 34≫

15. (Added) A method of, in an operation-performing-apparatus line including a plurality of operation performing apparatuses which perform respective predetermined operations related to a circuit substrate such as a printed wiring board, and a substrate conveyor which extends through each of the operation performing apparatuses and conveys the circuit substrate to said each operation performing apparatus, exchanging at least one first exchangeable constituent element of at least one operation performing apparatus as at least a portion of the plurality of operation performing apparatuses, with at least one second constituent element present outside said portion, the method being characterized by comprising the step of

causing an element carrier plate to hold said at least one second constituent element such that said at least one second constituent element is detachable from the element carrier plate, causing the substrate conveyor to convey the element carrier plate from one of opposite ends of the operation-performing-apparatus line toward an other end thereof, stopping the element carrier plate in said at least one operation performing apparatus of said portion, and automatically exchanging said at least one first constituent element held by at least one apparatus-side element-holding portion of said at least one operation performing apparatus, with said at least one second constituent element held by the element carrier plate.

16. (Added) The method according to claim 15, wherein the element carrier plate is caused to hold the respective second constituent elements corresponding to the respective first constituent elements of at least two operation performing apparatuses as said portion, and is stopped in each of said at least two operation performing apparatuses, and the respective first constituent elements held by the respective apparatus-side element-holding portions of said at least two operation performing apparatuses are automatically exchanged with the respective second constituent elements held by the element carrier plate.

17. (Added) The method according to claim 15 or claim 16, wherein the plurality of operation performing apparatuses include at least one component mounting apparatus having a mounting head including, as said at least one apparatus-side element-holding portion, at least one nozzle-holding portion which holds, as said at least one first constituent element, at least one first suction nozzle such that said at least one first suction nozzle is detachable from said at least one nozzle-holding portion, wherein said at least one first suction nozzle holds, by suction, at least one electronic-circuit component and mounts said at least one electronic-circuit component on the circuit substrate which is conveyed by the substrate conveyor and is held by a substrate holding device, and wherein a nozzle carrier plate as the element carrier plate is caused to hold, as said at least one second constituent element, at least one second suction

nozzle, and is conveyed by the substrate conveyor to at least one component mounting apparatus as at least a portion of said at least one component mounting apparatus, and said at least one first suction nozzle held by said at least one nozzle-holding portion of the mounting head is automatically exchanged with said at least one second suction nozzle held by the nozzle carrier plate.

18. (Added) The method according to claim 15 or claim 16, wherein the plurality of operation performing apparatuses include at least one component mounting apparatus having a mounting head including, as a first one of a plurality of said apparatus-side element-holding portions, a head-side nozzle-holding portion which holds, as one of a plurality of said first constituent elements, one of a plurality of first suction nozzles such that said one first suction nozzle is detachable from the head-side nozzle-holding portion, wherein said one first suction nozzle holds, by suction, an electronic-circuit component and mounts the electronic-circuit component on the circuit substrate which is conveyed by the substrate conveyor and is held by a substrate holding device, wherein said at least one component mounting apparatus can automatically exchange said one first suction nozzle held by the head-side nozzle-holding portion of the mounting head, with an other of the first suction nozzles that is held by a nozzle stocker as a second one of the plurality of apparatus-side element-holding portions, and wherein a plurality of plate-side nozzle-holding portions of a nozzle carrier plate as

the element carrier plate are caused to hold, as a plurality of said second constituent elements, a plurality of second suction nozzles, respectively, the nozzle carrier plate is conveyed by the substrate conveyor to at least one component mounting apparatus as at least a portion of said at least one component mounting apparatus, and at least one of the first suction nozzles that is held by the nozzle stocker is automatically exchanged with at least one of the second suction nozzles held by the nozzle carrier plate.

19. (Added) The method according to claim 18, wherein the operation-performing-apparatus line comprises a component-mounting-apparatus line including a plurality of component mounting apparatuses which are arranged in an array, and wherein the substrate conveyor is caused to convey the nozzle carrier plate to an arbitrary one of the component mounting apparatuses, and said at least one first suction nozzle held by the nozzle stocker of the arbitrary component mounting apparatus is automatically exchanged with said at least one of the second suction nozzles held by the nozzle carrier plate.

20. (Added) The method according to claim 19, wherein the plurality of component mounting apparatuses comprise a plurality of modules, respectively, which have respective identical constructions and which are arranged adjacent to each other to constitute the component-mounting-apparatus line, and wherein said at least one first suction nozzle held by the nozzle stocker of

an arbitrary one of the modules is automatically exchanged with said at least one of the second suction nozzles held by the nozzle carrier plate.

21. (Added) A method of, in an operation performing apparatus which performs a predetermined operation related to a circuit substrate, such as a printed wiring board, that is conveyed thereto by a substrate conveyor, and which includes an element stocker that holds at least one first exchangeable constituent element thereof that is needed to perform the operation, exchanging said at least one first constituent element held by the element stocker, with at least one second constituent element present outside the operation performing apparatus, the method being characterized by comprising the step of

causing an element carrier plate to hold at least one of said at least one second constituent element, causing the substrate conveyor to convey the element carrier plate to the operation performing apparatus, and automatically exchanging at least one of said at least one first constituent element held by the element stocker, with said at least one of said at least one second constituent element held by the element carrier plate.

22. (Added) The method according to claim 21, wherein the operation performing apparatus includes an element-holding portion which holds one of a plurality of said first constituent elements such that said one first constituent element is detachable from the element-holding portion, wherein the

operation performing apparatus performs the operation with said one first constituent element held by the element-holding portion, and wherein the operation performing apparatus has a function of automatically exchanging said one first constituent element held by the element-holding portion, with an other of the first constituent elements that is held by the element stocker, and automatically exchanges, owing to the function, said at least one of said at least one first constituent element held by the element stocker, with said at least one of said at least one second constituent element held by the element carrier plate.

23. (Added) The method according to claim 21, wherein the operation performing apparatus comprises a component mounting apparatus having, as the element stocker, a nozzle stocker which holds, as said at least one first constituent element, at least one of a plurality of first suction nozzles, and additionally having a mounting head including a head-side nozzle-holding portion which holds, as said one first constituent element, one of the first suction nozzles such that said one first suction nozzle is detachable from the head-side nozzle-holding portion, wherein said one first suction nozzle holds, by suction, an electronic-circuit component, and mounts the electronic-circuit component on the circuit substrate which is conveyed by the substrate conveyor and is held by a substrate holding device, wherein the component mounting apparatus can automatically exchange said one first suction nozzle held by the head-side nozzle-holding portion of the mounting head, with an other of the first suction

nozzles that is held by the nozzle stocker, and wherein a plurality of plate-side nozzle-holding portions of a nozzle carrier plate as the element carrier plate are caused to hold, as a plurality of said second constituent elements, a plurality of second suction nozzles, respectively, the nozzle carrier plate is conveyed by the substrate conveyor to the component mounting apparatus, and the component mounting apparatus automatically exchanges said at least one first suction nozzle held by the nozzle stocker, with at least one of the second suction nozzles held by the nozzle carrier plate.

24. (Added) An operation-performing-apparatus line, comprising:

a plurality of operation performing apparatuses which perform respective predetermined operations related to a circuit substrate such as a printed wiring board;

a substrate conveyor which extends through each of the operation performing apparatuses and conveys the circuit substrate to said each operation performing apparatus; and

an element carrier plate which includes at least one plate-side element-holding portion and which is conveyed by the substrate conveyor to each of at least two operation performing apparatuses as at least a portion of the plurality of operation performing apparatuses,

wherein said each of said at least two operation performing apparatuses includes

at least one apparatus-side element-holding portion which holds at least one first exchangeable constituent element

of said each of said at least two operation performing apparatuses such that said at least one first constituent element is detachable from said at least one apparatus-side element-holding portion, and

an automatically exchanging device which automatically exchanges said at least one first constituent element held by said at least one apparatus-side element-holding portion, with at least one second constituent element held by said at least one plate-side element-holding portion of the element carrier plate conveyed by the substrate conveyor.

25. (Added) The operation-performing-apparatus line according to claim 24, wherein said each of said at least two operation performing apparatuses further includes

an operation performing device which performs the predetermined operation related to the circuit substrate conveyed by the substrate conveyor, and

an element stocker which includes, as said at least one apparatus-side element-holding portion, at least one stocker-side element-holding portion that can hold said at least one first constituent element, and

wherein the automatically exchanging device automatically exchanges said at least one first constituent element held by said at least one stocker-side element-holding portion of the element stocker, with said at least one second constituent element held by said at least one plate-side element-holding portion of the element carrier plate conveyed by

the substrate conveyor.

26. (Added) The operation-performing-apparatus line according to claim 24 or claim 25, wherein each one of said at least one first constituent element and said at least one second constituent element includes an identification-code recording portion where an identification code which identifies said each one constituent element from an other of said at least one first constituent element and said at least one second constituent element is recorded, wherein said each of said at least two operation performing apparatuses further includes a reading device which reads the respective identification codes from the respective identification-code recording portions of said at least one first constituent element and said at least one second constituent element, and wherein the automatically exchanging device automatically exchanges, based on the respective identification codes read by the reading device, said at least one first constituent element held by said at least one apparatus-side element-holding portion, with said at least one second constituent element held by said at least one plate-side element-holding portion of the element carrier plate.

27. (Added) The operation-performing-apparatus line according to claim 26, wherein said each of said at least two operation performing apparatuses further includes an element stocker which includes, as said at least one apparatus-side element-holding portion, at least one stocker-side element holding-portion

that can hold said at least one first constituent element, wherein the operation-performing-apparatus line further comprises an element-code memory in which the respective identification codes of said at least one first constituent element held by the element stocker and said at least one second constituent element held by the element carrier plate are stored, and wherein the automatically exchanging device automatically exchanges, based on the respective identification codes stored in the element-code memory and the respective identification codes read by the reading device, said at least one first constituent element held by said at least one stocker-side element-holding portion of the element stocker, with said at least one second constituent element held by said at least one plate-side element-holding portion of the element carrier plate.

28. (Added) The operation-performing-apparatus line according to any of claims 24 through 27, wherein the element carrier plate comprises a nozzle carrier plate which holds, as said at least one second constituent element, at least one second suction nozzle, wherein said at least two operation performing apparatuses include at least one component mounting apparatus which mounts at least one electronic-circuit component on the circuit substrate conveyed thereto by the substrate conveyor, and wherein said at least one component mounting apparatus includes

a substrate holding device which holds each of the circuit substrate and the nozzle carrier plate that is conveyed by

the substrate conveyor,

a mounting head which includes, as said at least one apparatus-side element-holding portion, at least one head-side nozzle-holding portion which holds, as said at least one first constituent element, at least one first suction nozzle such that said at least one first suction nozzle is detachable from said at least one head-side nozzle-holding portion, wherein said at least one first suction nozzle holds, by suction, said at least one electronic-circuit component, and mounts said at least one electronic-circuit component on the circuit substrate held by the substrate holding device,

a moving device which moves at least one of the mounting head and the substrate holding device relative to an other of the mounting head and the substrate holding device, and

a nozzle-exchange control device which controls the moving device so that the mounting head exchanges said at least one first suction nozzle held by said at least one head-side nozzle-holding portion, with said at least one second suction nozzle held by the nozzle carrier plate held by the substrate holding device, wherein the automatically exchanging device comprises the moving device and the nozzle-exchange control device.

29. (Added) The operation-performing-apparatus line according to any of claims 24 through 27, wherein the element carrier plate comprises a nozzle carrier plate which holds, as said at least one second constituent element, at least one second suction nozzle,

wherein said at least two operation performing apparatuses include at least one component mounting apparatus which mounts an electronic-circuit component on the circuit substrate conveyed thereto by the substrate conveyor, and wherein said at least one component mounting apparatus includes

a substrate holding device which holds each of the circuit substrate and the nozzle carrier plate that is conveyed by the substrate conveyor,

a mounting head which includes, as a first one of a plurality of said apparatus-side element-holding portions, a head-side nozzle-holding portion which holds, as one of a plurality of said first constituent elements, one of a plurality of first suction nozzles such that said one first suction nozzle is detachable from the head-side nozzle-holding portion, wherein said one first suction nozzle holds, by suction, the electronic-circuit component, and mounts the electronic-circuit component on the circuit substrate held by the substrate holding device,

a nozzle stocker which includes, as at least one second apparatus-side element-holding portion of the plurality of apparatus-side element-holding portions, at least one stocker-side nozzle-holding portion which holds, as at least one of the first constituent elements, at least one of the first suction nozzles such that said at least one first suction nozzle is detachable from said at least one stocker-side nozzle-holding portion,

a moving device which moves at least one of the mounting head, the substrate holding device, and the nozzle

stocker relative to at least one of others of the mounting head, the substrate holding device, and the nozzle stocker, and

a nozzle-exchange control device which controls the moving device so that the mounting head exchanges said at least one first suction nozzle held by said at least one stocker-side nozzle-holding portion of the nozzle stocker, with said at least one second suction nozzle held by the nozzle carrier plate held by the substrate holding device, wherein the automatically exchanging device comprises the moving device and the nozzle-exchange control device.

30. (Added) The operation-performing-apparatus line according to claim 28 or claim 29, wherein the mounting head includes

a rotatable body which is rotatable about an axis line thereof, and

a plurality of said head-side nozzle-holding portions which are held by respective portions of the rotatable body that are located on a circle whose center is located on the axis line of the rotatable body, and which include respective end portions that hold the respective first suction nozzles such that each of the respective first suction nozzles is detachable from a corresponding one of the head-side nozzle-holding portions.

31. (Added) The operation-performing-apparatus line according to any of claims 28 through 30, wherein the nozzle carrier plate has a plurality of fiducial marks whose images can be taken by an image taking device, wherein said at least one component

mounting apparatus further includes a mark-image taking device which takes the respective images of the fiducial marks, and wherein the nozzle-exchange control device controls the moving device, based on results of processing of the images taken by the mark-image taking device.

32. (Added) The operation-performing-apparatus line according to any of claims 24 through 31, comprising a component-mounting-apparatus line including a plurality of modules which have respective identical constructions, function as a plurality of component mounting apparatuses, respectively, each of which mounts at least one electronic-circuit component on the circuit substrate conveyed by the substrate conveyor, and are arranged adjacent to each other to constitute the component-mounting-apparatus line, and wherein each of the modules includes the automatically exchanging device.

33. (Added) An operation performing apparatus for performing a predetermined operation related to a circuit substrate such as a printed wiring board, the apparatus including at least one first exchangeable constituent element, the apparatus being characterized by comprising:

a substrate conveyor which conveys the circuit substrate;

an operation performing device which performs the predetermined operation related to the circuit substrate conveyed by the substrate conveyor;

an element stocker which includes at least one stocker-side element-holding portion that holds said at least one first constituent element such that said at least one first constituent element is detachable from said at least one stocker-side element-holding portion;

an element carrier plate which includes at least one plate-side element-holding portion that holds at least one second constituent element such that said at least one second constituent element is detachable from said at least one plate-side element-holding portion, and which is conveyed by the substrate conveyor; and

an automatically exchanging device which automatically exchanges said at least one first constituent element held by said at least one stocker-side element-holding portion of the element stocker, with said at least one second constituent element held by said at least one plate-side element-holding portion of the element carrier plate conveyed by the substrate conveyor.

34. (Added) The operation performing apparatus according to claim 33, wherein each one of said at least one first constituent element and said at least one second constituent element has an identification-code recording portion where an identification code which identifies said each one constituent element from an other of said at least one first constituent element and said at least one second constituent element is recorded, wherein the operation performing apparatus further comprises a reading device which

reads the respective identification codes from the respective identification-code recording portions of said at least one first constituent element and said at least one second constituent element, and wherein the automatically exchanging device automatically exchanges, based on the respective identification codes read by the reading device, said at least one first constituent element held by said at least one stocker-side element-holding portion of the element stocker, with said at least one second constituent element held by said at least one plate-side element-holding portion of the element carrier plate.

35. (Added) The operation performing apparatus according to claim 34, further comprising an element-code memory in which the respective identification codes of said at least one first constituent element held by the element stocker and said at least one second constituent element held by the element carrier plate are stored, wherein the automatically exchanging device automatically exchanges, based on the respective identification codes stored in the element-code memory and the respective identification codes read by the reading device, said at least one first constituent element held by said at least one stocker-side element-holding portion of the element stocker, with said at least one second constituent element held by said at least one plate-side element-holding portion of the element carrier plate.

36. (Added) The operation performing apparatus according to any of claims 33 through 35, wherein the operation performing device

has a mounting head including a head-side nozzle-holding portion which holds, as one of a plurality of said first constituent elements, one of a plurality of first suction nozzles such that said one first suction nozzle is detachable from the head-side nozzle-holding portion, wherein said one first suction nozzle holds, by suction, an electronic-circuit component, and mounts the electronic-circuit component on the circuit substrate conveyed by the substrate conveyor, wherein the element stocker comprises a nozzle stocker which includes, as said at least one stocker-side element-holding portion, at least one stocker-side nozzle-holding portion which holds, as at least one of the first constituent elements, at least one of the first suction nozzles, wherein the element carrier plate comprises a nozzle carrier plate which includes, as said at least one plate-side element-holding portion, at least one plate-side nozzle-holding portion which holds, as said at least one second constituent element, at least one second suction nozzle, and wherein the operation performing apparatus further comprises:

a substrate holding device which holds each of the circuit substrate and the nozzle carrier plate that is conveyed by the substrate conveyor;

a moving device which moves at least one of the mounting head, the nozzle stocker, and the substrate holding device relative to at least one of others of the mounting head, the nozzle stocker, and the substrate holding device, and

a nozzle-exchange control device which controls the moving device so that the mounting head exchanges said at least

one first suction nozzle held by said at least one stocker-side nozzle-holding portion of the nozzle stocker, with said at least one second suction nozzle held by the nozzle carrier plate held by the substrate holding device, wherein the automatically exchanging device comprises the moving device and the nozzle-exchange control device.